AI Overview

The percent by mass of hydrogen in acetic acid (CH_3COOH) is **6.71%** (or **6.73%** depending on periodic table rounding).

Step-by-Step Calculation

1. **Identify the Chemical Formula**
   Acetic acid can be written as CH_3COOH or $C_2H_4O_2$. This means each molecule contains **2 carbon atoms**, **4 hydrogen atoms**, and **2 oxygen atoms**.
2. **Find the Atomic Masses**
   - Hydrogen (H): 1.008 g/mol
   - Carbon (C): 12.011 g/mol
   - Oxygen (O): 15.999 g/mol
3. **Calculate the Molar Mass of Acetic Acid**

$$\text{Molar Mass} = (2 \times 12.011) + (4 \times 1.008) + (2 \times 15.999) = 60.052 \text{ g/mol}$$

4. **Calculate the Total Mass of Hydrogen**

$$\text{Mass of Hydrogen} = 4 \times 1.008 = 4.032 \text{ g/mol}$$

5. **Determine the Mass Percentage**

$$\text{Percent by Mass of H} = \left(\frac{4.032 \text{ g/mol}}{60.052 \text{ g/mol}} \right) \times 100 = \mathbf{6.714\%}$$

*(Note: If your chemistry course uses rounded values like $H = 1.01$ g/mol and a total molar mass of 60.05 g/mol, the final result will round to **6.73%**.)*

If you need help calculating the mass percentages for **carbon** or **oxygen** in this same compound, let me know!

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Apr 10, 2025 — Step by Step Solution: * The molecular formula of acetic acid is CH3COOH. * Calculate the molar mass of acetic acid: Carbon (C): 1...

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Questions and answers

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Question

Percentage composition **by mass of hydrogen** in HC2H3O2

Answer · 0 votes

Concepts Percentage composition by mass, Mol… More

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Question

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Question

What is the percentage **by mass of hydrogen** in acitic **acid**

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2:43

Percent Composition by Mass for C2H4O2 (Acetic acid)

YouTube · Wayne Breslyn (Dr. B.)
Aug 20, 2020

The **percent** composition by **mass** for **hydrogen in acetic acid** (C2H4O2) is 6.73%.

16:24

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YouTube · Excellence Academy
Nov 3, 2024

5 key moments in this video

8:45

11.8c | Determine the percent by mass of hydrogen atoms in ...

YouTube · The Glaser Tutoring Company
Mar 3, 2023

To determine the **percent by mass of hydrogen** atoms, divide the **mass** of H2 (0.94 g) by the total solution **mass** (215.94 g) and multiply by 100.

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Homework.Study.com
https://homework.study.com › ... › Empirical formula

What is the percent by mass of hydrogen in HC_2H_3O_2?

To calculate the percent by mass of hydrogen in H C 2 H 3 O 2 we can use the following formula:) + (2 × 12.01) + (2 × 16.00 × 100 % = **6.73** % O 2 is 6.73%.

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What is the percentage by mass of hydrogen in acetic acid ...

May 30, 2023 — the percentage by mass of hydrogen in acetic acid is **3.36**%. The formula used is: Percentage by mass=(Mass of element/Mass of compound)×100.

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Percentage composition by mass of hydrogen in HC2H3O2

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Calculate the mass percent composition of hydrogen in ...

Sep 22, 2023 — Thus, the **mass percent** composition of **hydrogen in acetic acid** equals (4.04g/mol ÷ 60.05g/mol) x 100% = 6.72%.

2 answers · Top answer: Final Answer: The mass percent composition of hydrogen in acetic acid (HC_2…

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2.10: Percent Composition

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